

Notice of Allowability

Application No.

10/687,597

Applicant(s)

CHEN ET AL.

Examiner

Art Unit

HUNG Q. PHAM

2168

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 08/07/06.
2. ☒ The allowed claim(s) is/are 1-20.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413),
Paper No./Mail Date 20061013.
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


TIM VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Applicants' representative, Randy W. Lacasse, on 10/13/06.

In the Claims filed on 08/07/2006, please

REPLACE claims 1-20 with the clean version (without underlined and crossed mark) amended by examiner as below:

Claim 1. *A method for reorganizing a Large Object (LOB) table space in a database comprising the steps of:*

- (a) identifying a LOB base table space to be reorganized and its associated indexes;*
- (b) identifying auxiliary LOB table spaces and their associated indexes that are related to said identified LOB base table space being reorganized;*
- (c) concurrently allocating a shadow data set for each LOB table space and associated indexes identified in steps (a) and (b);*
- (d) loading rows from said identified LOB base table space into a corresponding shadow data set, and for each row loaded, reading LOB data from each of said identified auxiliary LOB table spaces relating to said loaded row and writing said read LOB data to a corresponding shadow data set; and*
- (e) switching an original data set of each of said LOB table spaces and associated indexes identified in steps (a) and (b) with corresponding shadow data set from step (d).*

Claim 2. *A method for reorganizing a Large Object (LOB) table space in a database, as per claim 1, wherein said method further comprising the steps of:*

*prior to step (a), blocking write access to data being reorganized; and
subsequent to step (e), allowing write operations related to data being organized to proceed.*

Claim 3. *A method for reorganizing a Large Object (LOB) table space in a database, as per claim 1, wherein said method is implemented across networks.*

Claim 4. *A method for reorganizing a Large Object (LOB) table space in a database, as per claim 3, wherein a network element of said networks is any of the following: local area network (LAN), wide area network (WAN), or the Internet.*

Claim 5. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database comprising the steps of:*

(a) identifying base and logically related LOB table spaces and associated indexes and allocating shadow data sets for each identified LOB table space and associated indexes;

(b) loading rows into an allocated shadow data set and extracting index keys for each loaded row, and

(i) for each row, identifying columns representing LOB data; and

(ii) for each column in said LOB data, using a rowid of current row to read said LOB data from its logically related LOB table space and write said read LOB data to the corresponding allocated shadow data set; and

(c) switching an original data set of each of said identified LOB table spaces and associated indexes with corresponding shadow data set derived from step (b).

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Claim 6. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, as per claim 5, wherein said method further comprising the steps of:*

prior to step (a), blocking write access to data being reorganized; and

subsequent to step (c), allowing write operations related to data being organized to proceed.

Claim 7. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, as per claim 5, wherein said method further comprising the steps of:*

prior to step (a), unloading rows from said identified base LOB table space; and

sorting unloaded rows, whereby said step of loading rows into shadow data set involves loading said sorted rows.

Claim 8. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, as per claim 5, wherein said method is implemented across networks.*

Claim 9. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, as per claim 8, wherein a network element of said networks is any of the following: local area network (LAN), wide area network (WAN), or the Internet.*

Claim 10. *An article of manufacture comprising a computer usable medium having computer readable program code embodied therein which implements a method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, said medium comprising:*

(a) computer readable program code identifying base and logically related LOB table spaces and associated indexes and allocating shadow data sets for each identified LOB table space and associated indexes;

(b) computer readable program code loading rows into an allocated shadow data set and extracting index keys for each loaded row, and

(i) for each row, computer readable program code identifying columns representing LOB data; and

(ii) for each column in said LOB data, computer readable program code using a rowid of current loaded row to read said LOB data from its logically related LOB table space and write said read LOB data to the corresponding allocated shadow data set; and

(c) computer readable program code switching an original data set of each of said identified LOB table spaces and associated indexes with corresponding shadow data set processed in step (b).

Claim 11. *An article of manufacture as per claim 10, wherein said medium further comprises: computer readable program code blocking write access to data being reorganized; and computer readable program code allowing write operations related to data being organized to proceed.*

Claim 12. *An article of manufacture as per claim 10, wherein said medium further comprises: computer readable program code unloading rows from said identified base LOB table spaces; and computer readable program code sorting said unloaded rows, whereby said computer readable program code for loading rows into allocated shadow data set loads said sorted rows.*

Claim 13. *An article of manufacture as per claim 12, wherein said medium further comprises: computer readable program code blocking write access to data being reorganized; and computer readable program code allowing write operations related to data being organized to proceed.*

Claim 14. *An article of manufacture comprising a computer usable medium having computer readable program code embodied therein which implements a method for reorganizing a Large Object (LOB) table space in a database, said medium comprising:*

(a) computer readable program code identifying a LOB base table space to be reorganized and its associated indexes;

(b) computer readable program code identifying auxiliary LOB table spaces and their associated indexes that are related to said identified LOB base table space being reorganized;

(c) computer readable program code concurrently allocating a shadow data set for each LOB table spaces and associated indexes identified in steps (a) and (b);

(d) computer readable program code loading rows from said identified LOB base table space into a corresponding shadow data set, and for each row loaded, computer readable program code reading LOB data from each of said identified auxiliary LOB table spaces relating to said loaded row and computer readable program code writing said read LOB data to a corresponding shadow data set; and

(e) computer readable program code switching an original data set of each of said LOB table spaces and associated indexes identified in (a) and (b) with corresponding shadow data set produced in (d).

Claim 15. *An article of manufacture as per claim 14, wherein said medium further comprises:*

computer readable program code blocking write access to data being reorganized; and

computer readable program code allowing write operations related to data being organized to proceed.

Claim 16. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database comprising the steps of:*

(a) identifying a base LOB table space to be reorganized and its associated indexes;

(b) identifying LOB table spaces and associated indexes logically related to said identified base LOB table space;

(c) allocating shadow data sets for said LOB table spaces and associated indexes;

(d) unloading rows from said identified base LOB table space;

(e) sorting said unloaded rows;

(f) loading sorted rows into said allocated shadow data sets and extracting index keys for each row as it is loaded, and

(i) for each loaded row, identifying columns representing LOB data;

(ii) for each identified column representing said LOB data, using a rowid of current loaded row to read the LOB data from its identified logically related LOB table space and write said read LOB data to the corresponding allocated shadow data set;

(g) sorting said extracted index keys;

(h) building indexes from said sorted index keys; and

(i) switching an original data set of each of said identified LOB table spaces and associated indexes with corresponding shadow data sets processed in step (f) and (h).

Claim 17. *A method for concurrently reorganizing logically related Large Object (LOB) table spaces in a database, as per claim 16, wherein said method further comprising the steps of:*

prior to step (b), blocking write access to data being reorganized; and

subsequent to step (i), allowing write operations related to data being organized to proceed.

Claim 18. *A computer based system to reorganize a table space in a database comprising:*

(a) an identifier to identify Large Object (LOB) table spaces that are related to said table space being reorganized;

(b) a shadow data set creator to concurrently create shadow data sets for said LOB table spaces and associated indexes;

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(c) a shadow data set loader to load rows from said table space being reorganized into a corresponding shadow data set, and for each row loaded, reading LOB data from each of said identified LOB table spaces relating to a loaded row and writing said read LOB data to the corresponding shadow data set; and

(c) a data switcher to switch an original data set of said LOB table spaces and associated indexes with shadow data set produced in step (c).

Claim 19. *A computer based system as per claim 18, wherein said system is implemented across networks.*

Claim 20. *A computer based system as per claim 19, wherein a network element of said networks is any of the following: local area network (LAN), wide area network (WAN), or the Internet.*

REASONS FOR ALLOWANCE

Claims 1-20 are allowed.

The following is an examiner's statement of reasons for allowance:

Prior arts of record do not render obvious, nor anticipate the combination of claimed elements including the technique *switching an original data set of each of said LOB table spaces and associated indexes identified in steps (a) and (b) with corresponding shadow data set from step (d) as recited in claims 1 and 14, switching an original data set of each of said identified LOB table spaces and associated indexes with corresponding shadow data set derived from step (b) as recited in claims 5 and 10, switching an original data set of each of said identified LOB table spaces and associated indexes with corresponding shadow data set processed in step (f) as recited in claim 16, and a data switcher to switch an original data set of said LOB table spaces and associated indexes with shadow data set produced in step (c) as*

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recited in claim 18. Thus, claims 1, 5, 10, 14, 16 and 18 are allowed. Dependent claims 2-4, 6-9, 11-13, 15, 17, 19 and 20 are allowed at least by virtue of their dependencies from claims 1, 5, 10, 14, 16 and 18.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

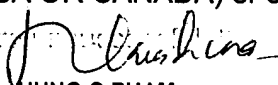
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Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HUNG Q. PHAM whose telephone number is 571-272-4040. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIM T. VO can be reached on 571-272-3642. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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October 14, 2006


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